

WHAT IS CLAIMED IS:

1. A limiting circuit comprising:

an excess signal circuit for inputting an input signal  
5 and a limitation signal, and comparing them with each other  
so as to output an excess amount thereof as an excess signal  
when the input signal exceeds the limitation signal; and

a signal output circuit for inputting the input signal  
and the excess signal, subtracting the excess signal from the  
10 input signal of which subtracted amount is output as an output  
signal.

2. The limiting circuit according to claim 1, further  
comprising a limitation signal circuit having such a structure  
15 that a constant current source and a resistor are connected  
in series and a voltage on a serial node is fetched as the  
limitation signal through a buffer.

3. The limiting circuit according to claim 2, wherein  
20 the excess signal circuit has such a structure that a transistor  
to which the input signal is supplied as a control signal and  
a resistor are connected in series, a first current corresponding  
to the input signal flows, a voltage on a node of the transistor  
and the resistor is set to be a comparison voltage, and a second  
25 current corresponding to an excess flows when the comparison  
voltage exceeds an output voltage of the buffer, and

the signal output circuit outputs, as the output signal,  
a third current corresponding to a difference between the first  
current and the second current.

4. The limiting circuit according to claim 1, further  
comprising a limitation signal circuit having such a structure  
that a constant current source and a resistor are connected  
in series and a voltage on a serial node is fetched as the  
35 limitation signal.

5. The limiting circuit according to claim 4, wherein the excess signal circuit has such a structure that a transistor to which the input signal is supplied as a control signal and a resistor are connected in series, a first current corresponding to the input signal flows, a voltage on a node of the transistor and the resistor is set to be a comparison voltage and is differentially amplified with the limitation signal, and a second current corresponding to an excess flows when the comparison voltage exceeds the limitation signal, and

the signal output circuit outputs, as the output signal, a third current corresponding to a difference between the first current and the second current.

6. An electric motor driving device comprising:

an error amplifier for generating an error output signal depending on a difference between a reference signal and a current detection signal corresponding to a current flowing to an electric motor;

a limiting circuit for inputting the error output signal, limiting a value to be a predetermined value, and outputting a limitation error output signal; and

a driving circuit for PWM driving the electric motor based on the limitation error output signal and a signal corresponding to a sine wave-shaped rotating position signal of the electric motor.

7. The electric motor driving device according to claim 6, wherein the driving circuit has a multiplier for multiplying the limitation error output signal by the sine wave-shaped rotating position signal of the electric motor and outputting a PWM command signal, a PWM converting block for forming a PWM control signal based on the PWM command signal, and a driving stage block for outputting an electric motor driving current based on the PWM control signal.

8. The electric motor driving device according to claim 6,

wherein the limiting circuit according is comprising:

an excess signal circuit for inputting an input signal and a limitation signal, and comparing them with each other so as to output an excess amount thereof as an excess signal

5 when the input signal exceeds the limitation signal; and

a signal output circuit for inputting the input signal and the excess signal, subtracting the excess signal from the input signal of which subtracted amount is output as an output signal.

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